

**U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM**

SCIENTIFIC NAME: *Etheostoma moorei* Raney and Suttkus, 1964

COMMON NAME: yellowcheek darter

LEAD REGION: 4

INFORMATION CURRENT AS OF: October 2005

STATUS/ACTION

☐ Species assessment - determined we do not have sufficient information on file to support a proposal to list the species and, therefore, it was not elevated to Candidate status

☐ New candidate

☒ Continuing candidate

☐ Non-petitioned

☒ Petitioned - Date petition received: May 11, 2004

☐ 90-day positive - FR date:

☐ 12-month warranted but precluded - FR date:

☐ Did the petition request a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES:

a. Is listing warranted (if yes, see summary of threats below)? Yes

b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes

c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded.

We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions (including candidate species with lower LPNs). During the past 12 months, most of our national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, meeting statutory deadlines for petition findings or listing determinations, emergency listing evaluations and determinations, and essential litigation-related, administrative, and program management tasks. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the past 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (<http://endangered.fws.gov/>).

☐ Listing priority change

Former LP: ____

New LP: ____

Date when the species first became a Candidate (as currently defined): 2001

____ Candidate removal: Former LPN: ____

____ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

____ U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

____ F – Range is no longer a U.S. territory.

____ I – Insufficient information exists on biological vulnerability and threats to support listing.

____ M – Taxon mistakenly included in past notice of review.

____ N – Taxon does not meet the Act's definition of "species."

____ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Fish - Percidae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Arkansas

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:

Arkansas (Searcy, Stone, Cleburne, and Van Buren Counties)

LAND OWNERSHIP:

The yellowcheek darter is known historically from four headwaters tributaries of the upper Little Red River in Cleburne, Searcy, Stone, and Van Buren counties, Arkansas. Approximately 93 percent of the upper Little Red River watershed is in private ownership, with the remaining 7 percent owned by the U.S. Army Corps of Engineers (4 percent), the U.S. Forest Service (2 percent), and the Arkansas Game and Fish Commission (1 percent).

LEAD REGION CONTACT: Richard Gooch, 404/679-7124 (Richard_Gooch@fws.gov)

LEAD FIELD OFFICE CONTACT: Arkansas Field Office, Chris Davidson, 501-513-4481 (Chris_Davidson@fws.gov)

BIOLOGICAL INFORMATION

Species Description

The yellowcheek darter (*Etheostoma moorei*) is a small and compressed fish which attains a maximum standard length of about 64 mm (2.5 inches), has a moderately sharp snout, deep body, and deep caudal peduncle. The back and sides are grayish brown, often with darker brown saddles and lateral bars. Breeding males are brightly colored with a bright blue or brilliant turquoise breast and throat and light green belly, while breeding females possess orange and red-orange spots but are not brightly colored (McDaniel 1984, Robison and Buchanan 1988). First

collected in 1959 from the Devils Fork tributary of the Little Red River, this species was eventually described by Raney and Suttkus in 1964, using 228 specimens from the Middle Fork, South Fork, and Devils Fork tributaries of the Little Red River. The yellowcheek darter is one of only two members of the subgenus *Nothonotus* known to occur west of the Mississippi River.

Taxonomy

The yellowcheek darter was first described as *Etheostoma moorei* by Raney and Suttkus (1964). The type locality was collected in 1959 from Devils Fork Little Red River and the species was eventually described using 228 specimens from three tributaries of the Little Red River: Middle, South, and Devils Forks. Wood (1996) verified the status of the yellowcheek darter within the subgenus *Nothonotus*. There is no other synonymy for the species.

Habitat/Life History

The yellowcheek darter inhabits high gradient headwater tributaries with clear water; permanent flow; moderate to strong riffles; and gravel, rubble, and boulder substrates (Robison and Buchanan 1988). Yellowcheek darter prey items include aquatic dipteran larvae, stoneflies, mayflies, and caddisflies (McDaniel 1984).

Males and females reach sexual maturity at one year of age, and maximum life span is around four years (McDaniel 1984). Spawning occurs from late May through June in the swift to moderately swift portions of riffles, often around or under the largest substrate particles (McDaniel 1984), although ripe females have been found at the head of riffles in smaller gravel substrate (Wine *et al.* 2000). Spawning yellowcheek darters occupy large boulder substrate and turbulent water near the lower portion of riffles (Wine *et al.* 2000). During non-spawning months, there is a general movement to portions of the riffle with smaller substrate, such as gravel or cobble, and less turbulence (Robison and Harp 1981). Weston and Johnson (2005) observed that yellowcheek darters moved very little during a one year migration study. It was noted that the yellowcheek darter appears to be a relatively non-mobile species, with 19 of 22 recaptured darters found within nine meters of their original capture position after periods of several months. A number of life history characteristics including courtship patterns, specific spawning behaviors, egg deposition sites, number of eggs per nest, degree of male protection of the nest, and degree of territoriality are unknown at this time, however, researchers have suggested that yellowcheek darters deposit eggs on the undersides of larger rubble in swift water (McDaniel 1984). Also, Wine and Blumenshine (2002) noted that during laboratory spawning, female yellowcheeks bury themselves in fine gravel/sand substrates (often behind large cobble or boulders) with only their heads and caudal fin exposed. A male yellowcheek will then position himself above the buried female and fertilize her eggs as she releases them in a vibrating motion. Clutch size and nest defense behavior were not observed.

A 1999 Arkansas State University (ASU) genetic study evaluated genetic and meristic variation among yellowcheek darter populations. The study revealed that although all known yellowcheek darter populations were genetically very similar, populations in the Turkey Fork reach of Devils Fork differed from South Fork and Middle Fork populations, possibly indicating that the Turkey Fork population may represent an evolutionarily significant unit (Mitchell 1999, Mitchell *et al.*

2002). It was also noted that individuals captured in Turkey Fork exhibited a markedly larger body size and a longer spawning period, suggesting some variation between populations. Therefore, it has been theorized that the Turkey Fork population may represent a subspecies of the original yellowcheek darter populations in Devils Fork (Mitchell 1999), and that individuals migrated to the South and Middle Fork at a later time (Dr. George Harp, ASU, personal communication). A 2005 genetics study by researchers at ASU revealed distinct differences between the Middle and South Forks as well, suggesting that each stream should be treated as management units (Johnson 2005).

Historical Range/Distribution

The yellowcheek darter is endemic to four tributaries of the upper Little Red River: Devils Fork (including the Turkey and Beech Forks segments), the Middle Fork, the South Fork, and Archey Fork, in Cleburne, Searcy, Stone, and Van Buren Counties, Arkansas (Robison and Buchanan 1988). In 1962, the construction of a dam on the Little Red River to create Greers Ferry Lake impounded much of the range of this species, including the lower reaches of Devils Fork, which was the collection site of the holotype. The lake flooded optimal habitat for the species, and caused the genetic isolation of the populations in the four tributaries (McDaniel 1984). Historically, the yellowcheek darter was known to occur throughout all four headwater streams in portions that maintained permanent year round flows.

Current Range/Distribution

Since 1999, five different studies have failed to observe specimens of yellowcheek darter in the Turkey Fork Little Red River. They have been observed lower in the watershed within that system in the Beech Fork, where flows are more permanent. Yellowcheeks otherwise inhabit most of their historical range in greatly reduced numbers at upper portions of the watersheds.

Population Estimates/Status

In the 1978-81 study by Robison and Harp (1981), yellowcheek darters occurred in greatest numbers in the Middle and South Forks of the Little Red River, with populations estimated at 36,000 and 13,500, respectively, while populations in both Devils Fork and Archey Fork were estimated at approximately 10,000 individuals (Robison and Harp 1981). During this study, the four major tributaries of the Little Red River supported an estimated 60,000 yellowcheek darters, and the species was considered the most abundant riffle fish present (Robison and Harp 1981). Extensive sampling of the first two tributaries of Little Red River below Greers Ferry Dam (both named Big Creek) failed to yield yellowcheek darter and no darters were found in immediately adjacent watersheds (Robison and Harp 1981).

While collecting specimens for the 1999 genetic study, ASU researchers discovered that yellowcheek darters were no longer the most abundant riffle fish and were more difficult to find (Wine *et al.* 2000). Because optimal habitat had been destroyed by the creation of Greers Ferry Lake (McDaniel 1984), yellowcheek darters moved to upper stream reaches with lower summer flow, smaller substrate particle size, and reduced gradient. A thorough status survey conducted in 2000 found yellowcheek darters in only three of the four historic range tributaries in greatly reduced numbers (Wine *et al.* 2000). Populations in Middle Fork were estimated at

approximately 6,000 individuals, 2,300 in South Fork, and 2,000 in Archey Fork. No yellowcheek darters were collected from the Devils Fork system. Where yellowcheek darters were captured, they were fifth in abundance compared to other riffle fishes, while historically they were the most abundant riffle fish. Fish community composition was similar between the 1978-81 and 2000 studies, but the proportion of yellowcheek darters declined substantially. Fish known to co-exist with yellowcheek darter include the rainbow darter (*E. caeruleum*) and greenside darter (*E. blennioides*), which can use pool habitats during periods of low flow, as evidenced by the collection of these two species from pools during electroshocking activities. Electroshocking has not revealed any yellowcheek darters in pools, suggesting that they are unable to tolerate pool conditions. An inability to use pools during low flows would make them much more vulnerable to seasonal fluctuations in flows that reduce riffle habitat. As a result, researchers have suggested that declines in yellowcheek darters are more likely a species rather than community phenomenon (Wine *et al.* 2000).

Weston and Johnson (2005) estimated yellowcheek darter populations within the Middle Fork to be between 15,000 and 40,000 individuals, and between 13,000 and 17,000 individuals in the South Fork. Such increases would indicate remarkable adaptability to changing environmental conditions. However, it should be noted that estimates were based upon mark/recapture estimates using the Jolly-Seber method which requires high numbers of recaptured specimens for accurate estimations. Recaptures were extremely low during that study; therefore, population estimates were highly variable and confidence in the resulting estimates is somewhat low.

THREATS

A. The present or threatened destruction, modification, or curtailment of its habitat or range. Based upon current knowledge and a 2004/2005 threats assessment (Davidson and Wine 2004; Davidson 2005) conducted by the U. S. Fish and Wildlife Service, gravel mining, unrestricted cattle access into streams, water withdrawal for agricultural and recreational purposes (i.e. golf courses), lack of adequate riparian buffers, construction and maintenance of county roads, and non-point source pollution arising from a broad array of activities appear to be degrading suitable habitat for the species. Channelization of the lower Archey and South Forks has degraded habitat downstream and upstream of the project area. The threats assessment documented occurrences of the aforementioned activities and found 52 sites on the Middle Fork, 28 sites on the South Fork, eight sites on Archey Fork (Davidson 2005), and one site in the Turkey/Beech/Devils Fork system that are potential contributors to the decline of the species.

Robison and Harp (1981), McDaniel (1984), and Robison and Buchanan (1988) have attributed the decline in populations of yellowcheek darters in the four headwater tributaries of the Little Red River to habitat alteration and degradation. The suspected primary cause of the species' decline is the impoundment of the lower reaches of the four tributaries of the Little Red River that form Greers Ferry Lake, areas that in the past provided optimal habitat for this species. The creation of Greers Ferry Lake in 1962 converted optimal yellowcheek darter habitat (clear, cool, perennial flow with large substrate particle size, (Robison and Buchanan 1988)), to a deep water, lacustrine environment. This dramatic change in habitat flooded spawning sites, altered habitat radically, and changed chemical and physical characteristics in the streams which provide

optimal habitat for this species. Impoundments profoundly alter channel characteristics, habitat availability, and flow regime with serious consequences for biota (Allan and Flecker 1993, Ward and Stanford 1995), change lotic to lentic waters, increase depths and sedimentation, decrease dissolved oxygen, drastically alter resident fish populations (Neves *et al.* 1997), disrupt fish migration, and destroy spawning habitat (Ligon *et al.* 1995).

Because it is endemic to only four headwater tributaries of the Little Red River, the yellowcheek darter is vulnerable to alterations in physical habitat characteristics and water quality degradation. As a result, yellowcheek darter numbers have declined by 83 percent in both the Middle Fork and South Fork, and 60 percent in Archey Fork in the past 20 years. No yellowcheek darters were found in the Devils Fork during the 2000 status survey, the species having apparently been extirpated in that reach. A comparison of inhabited stream reaches in the 1981 survey versus the 2000 survey reveals that the largest decline occurred in the South Fork, where reaches formerly inhabited by the yellowcheek darter declined by 70 percent. The second largest decline occurred in the Archey Fork, where there was a 60 percent reduction in inhabited stream reach. The Middle Fork showed the least decline in inhabited stream reach, at 22 percent.

Ozark headwater streams typically exhibit seasonal fluctuations in flows, with flow rates highest in spring, and lowest in late summer and fall. The upper reaches of these small tributaries are most affected by seasonally fluctuating water levels (Robison and Harp 1981). As a result, they often lack consistent and adequate flows, and by late summer or fall are reduced to a series of isolated pools (Mitchell Wine, pers. comm.). Because the yellowcheek darter requires permanent flows with moderate to strong current (Robison and Buchanan 1988), seasonal fluctuations in stream flows that reduce lentic flows to a series of isolated pool habitats, are a serious threat. Consequently, the 2000 status survey revealed yellowcheek darters in the lower reaches of only three of these four small headwater tributaries.

The Service believes that secondary causes of yellowcheek declines include habitat degradation from land use activities in the watershed, including agriculture and forestry. Traditional farming practices, feed-lot operations, and associated poor land use practices contribute many pollutants, and agriculture affects 72 percent of impaired river kilometers in the United States (Neves *et al.* 1997). Nutrients, bacteria, pesticides, and other organic compounds generally are found in higher concentrations in agricultural areas than forested areas. Nutrient concentrations in streams may result in increased algal growth in streams, and a related alteration in fish community composition (Petersen *et al.* 1999). Major agricultural activities within the Little Red River watershed include poultry, dairy, swine, and beef cattle operations.

The Arkansas Natural Resources Conservation Service has identified animal wastes, nutrients, excessive erosion, loss of plant diversity, and declining species as water quality concerns associated with agricultural land use activities in the upper Little Red River watershed (NRCS 1999). Large poultry and dairy operations increase nutrient inputs to streams when producers apply animal waste to pastures to stimulate vegetation growth for grazing and hay production. Continuous grazing methods in the watershed allow unrestricted animal access to grazing areas, and on steeper slopes this results in increased runoff and erosion (NRCS 1999). Since pastures

often extend directly to the edge of the stream, and lack a riparian zone of vegetation, runoff from pastures carry sediments and nutrients directly into streams. Livestock spend a disproportionate amount of time in riparian areas during hot summer months and trampling and grazing can change and reduce vegetation, and eliminate riparian areas by channel widening, channel aggradation, or lowering of the water table (Armour *et al.* 1991).

Timber harvesting activities involving clear cutting entire, steep hillsides have been observed recently in the watershed (Dr. George Harp, ASU, pers. comm.). A lack of mandatory best management practices (BMP's) during timber harvests has resulted in water quality degradation and habitat alteration in stream reaches adjacent to harvesting operations. When timber harvests involve clear cutting to the water's edge, without leaving a riparian buffer, silt and sediment enter streams lying at the bottom of steep slopes. The lack of stream side vegetation also promotes bank erosion that alters stream courses and introduces large quantities of sediment into the channel (Allan 1995). Timber harvest operations that use roads on steep slopes to transport timber can carry silt and sediment from the road into the stream at the bottom of the slope. Logging impacts on sediment production are considerable, but often erosion of access and haul roads produces more sediment than the land harvested for timber (Brim Box and Mossa 1999). These activities have occurred historically and continue to occur in the upper Little Red River watershed.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

Over collection is not thought to be a significant cause for decline, although it may contribute to an already declining population. The yellowcheek darter is a rare and unique species that has been collected by researchers and students throughout America. The bridge over the Middle Fork Little Red River near Clinton, Arkansas, is a popular locality to collect this species. Because the yellowcheek darter is not used as a sport fish or for bait, collection by the general public is not considered a threat.

C. Disease or predation.

The Service is aware of no evidence which would demonstrate that disease or predation is a serious threat. Yellowcheek darter is prey for fish, avian, and mammalian predators. Yellow grubs have been reported to occasionally occur on yellowcheek darter.

D. The inadequacy of existing regulatory mechanisms.

The ADEQ has established water quality standards for surface waters in Arkansas, including specific standards for those streams designated as "extraordinary resource waters" (ERW) based on "a combination of the chemical, physical, and biological characteristics of a waterbody and its watershed, which is characterized by scenic beauty, aesthetics, scientific values, broad scope recreation potential, and intangible social values" (State of Arkansas 1998). As described in ADEQ's Regulation 2, Section 2.203, extraordinary resource waters "shall be protected by (1) water quality controls, (2) maintenance of natural flow regime, (3) protection of in stream habitat, and (4) pursuit of land management protective of the watershed." This regulatory mechanism has precluded most large scale commercial gravel mining in the watershed; however, gravel mining is still considered a cause of habitat degradation and a threat in the Little Red

River watershed. The Middle, Archey, and Devils (and its major tributaries) Forks are designated as ERW. The South Fork has not been designated as an ERW. The applicable water quality standards have not protected yellowcheek darter habitat from the damaging habitat alterations and water quality degradation from activities such as timber harvesting and agriculture.

The yellowcheek darter is ranked by the Arkansas Natural Heritage Commission (ANHC) as an S1G1 species: extremely rare in Arkansas, and critically imperiled globally. The ANHC's designation as an S1G1 species does not confer any official protection and has not prevented activities which could lead to the loss and degradation of habitat.

The Arkansas Forestry Commission is the state agency responsible for establishing best management practices for timber harvests in the state. BMP's for timber harvests in Arkansas consist only of recommendations and guidelines. Therefore, there is no requirement that timber harvesters include BMP's in timber operations. The BMP's are currently under revision, but the Service does not know what effect these revisions will have on aquatic habitats within the range of the species.

E. Other natural or manmade factors affecting its continued existence.

The Little Red River watershed has experienced moderate drought conditions over the last two to three years (Southern Regional Climate Center 2000), which has affected flows in its tributaries. Stage height and flow rates were one foot lower during the sampling period for the 2000 status survey than during the 1979-80 study (Wine *et al.* 2000). Streamflow is strongly correlated with important physical and chemical parameters that can be considered "master variables" that limit the distribution and abundance of riverine species (Power *et al.* 1995, Resh *et al.* 1988) and regulates the ecological integrity of flowing water systems (Poff *et al.* 1997). No yellowcheek darters were found in the upper reaches of any study streams or in the Turkey/Beech Fork reach of Devils Fork, which is a result of drought conditions and indicates a contraction of yellowcheek darter range to stream reaches lower in the watershed where flows are maintained for a greater portion of the year (Wine *et al.* 2000).

Since the impoundment of Greers Ferry Lake, populations of yellowcheek darters in the four tributaries of the Little Red River have been fragmented, such that genetic interchange no longer occurs between subpopulations in different tributaries, and each discrete subpopulation in each tributary reproduces only with other members in the same tributary. This fragmentation of the populations can reduce genetic diversity in the separated populations, promoting a loss of physiological or adaptive mechanisms that would improve the yellowcheek darter's chances for withstanding stochastic events. Genomic heterogeneity is lost when the natural interchange of genetic material between populations is prohibited. Population genetics has emphasized the profound negative effects the loss of genomic heterogeneity has on overall population viability of species with restricted and fragmented ranges (Chesser 1983, Gilpin and Soule 1986). Such isolation can eventually lead to inbreeding depression (Avis and Hambrick 1996), which can be a major detriment to a species' recovery (Frankham 1995). Inbreeding often results in decreased fitness of multiple life stages, and the loss of genetic heterozygosity results in significantly

increased risk of extinction in localized natural populations (Saccheri *et al.* 1998).

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

A Programmatic Candidate Conservation Agreement with Assurances currently is being developed by a multi agency contingency and signatory parties include the U.S. Fish and Wildlife Service, Arkansas Game and Fish Commission, Natural Resources Conservation Service, and The Nature Conservancy. The agreement is currently under individual agency review and implementation is expected during early to mid 2006. Under this agreement, landowners will provide habitat for yellowcheek darters throughout the watershed in return for regulatory assurances, should the darter become listed under the Endangered Species Act.

Additionally, Arkansas Field Office staff received funding in 2005 through the Partners for Fish and Wildlife program and the Arkansas Game and Fish Commission to implement streambank restoration and cattle exclusion on a one mile reach of the South Fork Little Red River owned by Dan Eoff of Clinton, Arkansas. The stream is inhabited by the endangered speckled pocketbook mussel and the candidate yellowcheek darter. Mr. Eoff owns a significant portion of land along the river and is expected to enroll his land in the Candidate Conservation Agreement with Assurances for the yellowcheek darter.

In September 2002, several adult yellowcheek darters were collected to begin determining propagation protocols for the species at Conservation Fisheries, Inc. in Knoxville, Tennessee. Once protocols are developed, a propagation program will be established to ensure the species' persistence while threats to its habitat are abated.

SUMMARY OF THREATS

Threats include gravel mining, unrestricted cattle access into streams, water withdrawal for agricultural and recreational purposes (e.g. golf courses), lack of adequate riparian buffers/eroding streambanks, construction and maintenance of county roads, and non-point source pollution arising from a broad array of activities which all appear to be degrading suitable habitat for yellowcheek darter. Channelization of the lower Archey and South Forks has degraded habitat downstream and upstream of the project area. A threats assessment documented occurrences of the aforementioned activities and found 52 sites on the Middle Fork, 28 sites on the South Fork, eight sites on Archey Fork (Davidson 2005), and one site in the Turkey/Beech/Devils Fork system that are potential contributors to the decline of the species. Also of concern is impoundment from the construction of Greers Ferry Dam in 1964 which destroyed much of the historic range of the species and poor timber harvesting practices.

For species that are being removed from candidate status:

___ Is the removal based in whole or in part on one or more individual conservation efforts that you determined met the standards in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)?

RECOMMENDED CONSERVATION MEASURES

Recommended conservation measures are outlined in full detail in the “Conservation Strategy for the Speckled Pocketbook (*Lampsilis streckeri*) and Yellowcheek Darter (*Etheostoma moorei*)”, on file at the Arkansas Field Office of the U.S. Fish and Wildlife Service, Conway, Arkansas.

LISTING PRIORITY

| THREAT | | | |
|-----------------|-----------------|-----------------------|-----------|
| Magnitude | Immediacy | Taxonomy | Priority |
| High | Imminent | Monotypic genus | 1 |
| | | Species | 2* |
| | Non-imminent | Subspecies/population | 3 |
| | | Monotypic genus | 4 |
| | | Species | 5 |
| Moderate to Low | Imminent | Subspecies/population | 6 |
| | | Monotypic genus | 7 |
| | | Species | 8 |
| | Non-imminent | Subspecies/population | 9 |
| | | Monotypic genus | 10 |
| | | Species | 11 |
| | | Subspecies/population | 12 |

RATIONALE FOR LISTING PRIORITY NUMBER:

Magnitude:

The yellowcheek darter is endemic to four tributaries of the upper Little Red River watershed. Population estimates indicate that population size is rapidly declining in each of the four tributaries. Additionally, the occupied reaches have decreased from 130.4 km to 65.0 km. Alterations to physical habitat characteristics and water quality degradation continue to persist in the watershed further increasing the vulnerability of this species. Land uses such as unrestricted cattle access, removal of riparian buffer zones, lack of properly implemented best management practices, runoff from pastures carrying sediments and nutrients and eroding stream banks are threats to the species. Since the impoundment of Greers Ferry Lake, populations in the four tributaries have been fragmented such that genetic interchange no longer flows between subpopulations thereby promoting a loss of physiological and adaptive mechanisms that are loss due to reduced genetic diversity. Inbreeding often results decreased fitness and increased risk of extinction. Due to these threats, we assigned a magnitude of high to this species.

Imminence:

Historically, an earthen dam was constructed across a riffle in the lower South Fork to create a pool for the annual chuck wagon races. In 2003, numerous dead yellowcheek darters were

observed immediately downstream from this unpermitted activity. The Service and U. S. Army Corps of Engineers were able to meet with the landowner in 2004 and suggest an alternative solution to constructing a dam that would have the same result (increased water depth for the horses to race through during the “Snowy River Run”) and minimize impacts to the yellowcheek darter. While this threat has been minimized, the annual chuck wagon races still pose a threat to this species. The primary threats occur for one week annually from unrestricted horse access to the stream, increased sedimentation from road crossings, and increased nutrient runoff from pastures with horse manure following the event.

Continued channel maintenance, modification, and alteration (e.g. dredging, snag removal and illegal gravel mining) in approximately a three mile reach of the Archey Fork results in unsuitable habitat for yellowcheek darters. The Service, along with the Arkansas Game and Fish Commission, has conducted an assessment on each fork known to support yellowcheek darters to identify threats within each watershed. The threats assessment documented occurrences of detrimental activities and found 52 sites on the Middle Fork, 28 sites on the South Fork, eight sites on Archey Fork, and one site in the Turkey/Beech/Devils Fork system that are potential contributors to the decline of the species. The Arkansas Department of Environmental Quality listed the Middle Fork Little Red River as an impaired waterbody in 2004 due to bacteria contamination and low dissolved oxygen. Due to these impending threats, we assigned an immediacy of imminent to this species.

Rationale for Change in Listing Priority Number (insert if appropriate)

Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Is Emergency Listing Warranted?

No. Federal and state agencies are working to implement conservation initiatives (CCAA) and strategies that will help alleviate and abate threats to this species.

DESCRIPTION OF MONITORING

Weston and Johnson (2005) estimated yellowcheek darter populations within the Middle Fork to be between 15,000 and 40,000 individuals, and between 13,000 and 17,000 individuals in the South Fork. Such increases would indicate remarkable adaptability to changing environmental conditions. However, it should be noted that estimates were based upon mark/recapture estimates using the Jolly-Seber method which requires high numbers of recaptured specimens for accurate estimations. Recaptures were extremely low during that study; therefore, population estimates were highly variable and confidence in the resulting estimates is somewhat low. Other than this, no ongoing monitoring effort is being conducted for the species. A population status monitoring program is proposed as part of the Candidate Conservation Agreement with Assurances to be implemented for the yellowcheek darter in 2006.

COORDINATION WITH STATES

Indicate which State(s) (within the range of the species) provided information or comments on the species or latest species assessment: Arkansas- Arkansas Game and Fish Commission.

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APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve: /s/ Jeffrey M. Fleming 11/16/2005
Acting Regional Director, Fish and Wildlife Service Date



Concur: _____ August 23, 2006
Acting Director, Fish and Wildlife Service Date

Do Not Concur: _____
Director, Fish and Wildlife Service Date

Date of annual review: October 2005

Conducted by: Conway, Arkansas Field Office